

REMARKS

Reconsideration of the application is requested in view of the remarks below.

A. Rejection Under 35 USC 102

The Office Action rejected Claims 1, 4 and 8 under 35 USC 102 over U.S. Pat. No. 6,215,652 (Yoshida). The rejection should be withdrawn in view of the remarks below.

It is well settled that in order for a prior art reference to anticipate claim, the reference must disclose each and every element of claim with sufficient clarity to prove its existence in prior art. The disclosure requirement under 35 USC 102 presupposes knowledge of one skilled in the art, but such presumed knowledge does not grant a license to read into prior art reference teachings that are not there. See Motorola Inc. v. Interdigital Technology Corp. 43 USPQ2d 1481 (1997 CAFC).

Applicants' invention encompassed by Claims 1, 4 and 8 relates to an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer, and (c) a dielectric barrier layer comprising niobium pentoxide. In one embodiment, Applicants' invention relates to a process that makes an anode for a capacitor. The process involves the steps of (i) sintering niobium metal powders and (ii) electrolytically producing a dielectric barrier layer on a surface of a sintered body. The process makes a barrier layer with an electrolyte containing an aqueous solution of an organic acid containing an anion. In one embodiment, Applicants' invention relates to a capacitor having an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer and (c) a dielectric barrier layer of niobium pentoxide.

Yoshida discloses a solid electrolytic capacitor in which a dielectric layer formed on the surface of an anode obtained by molding and then sintering a niobium metal powder comprises a niobium oxide layer and a niobium nitride region (See Summary of Invention). Yoshida also discloses a method for manufacturing a solid electrolytic capacitor by molding and sintering a niobium metal powder to form an anode, and then subjecting the surface of this anode to a nitriding treatment, and a

step of anodizing the nitrided anode to form a dielectric layer comprising a niobium oxide layer and a niobium nitride region.

Yoshida's solid electrolytic capacitor or Yoshida's method for making a solid electrolytic capacitor does not anticipate an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer, and (c) a dielectric barrier layer comprising niobium pentoxide. The dielectric layer disclosed by Yoshida, for instance, consists of a niobium oxide layer (not a suboxide) and a niobium nitride region (See Column 2, lines 56-57), which can be present in various modifications (See Column 2, line 58 to Column 3, line 32). No reference is made to a conductive niobium suboxide layer encompassed by Applicants' invention. Yoshida does not disclose a capacitor having an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer and (c) a dielectric barrier layer of niobium pentoxide. Reconsideration is requested.

With respect to the process encompassed by Claim 4, Yoshida does not anticipate Applicants' invention. Applicants' Claim 4 encompasses a process that requires the use of a special electrolyte, namely an aqueous solution containing an anion of an organic acid. Yoshida literal teachings do not disclose a process for producing an anode for a capacitor by sintering niobium metal powders and electrolytically producing a dielectric barrier layer on a surface of a sintered body, in which the barrier layer is produced with an electrolyte that contains an aqueous solution of an organic acid containing an anion. Reconsideration is requested.

B. Rejections Under 35 USC 103

1. The Rejection of Claims 2 and 5 Under 35 USC 103 Over U.S. Pat. No. 6,215,652 in view of U.S. Pat. No. 6,136,062.

The Office Action rejected Claims 2 and 5 under 35 USC 103 over U.S. Pat. No. 6,215,652 (Yoshida) in view of U.S. Pat. No. 6,136,062 (Löffelholz). The rejection should be withdrawn in view of the remarks below.

It is well established that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention,

must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification must have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496, (CCPA 1970).

Applicants' invention, as encompassed by Claims 2 and 5, relates to an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer, and (c) a dielectric barrier layer comprising niobium pentoxide, in which the anode has a tantalum content in the dielectric barrier layer ranging from about 1500 to about 12,000 ppm, relative to the anode. In one embodiment, Applicants' invention relates to a process for producing an anode for a capacitor comprising sintering niobium metal powders and electrolytically producing a dielectric barrier layer on a surface of a sintered body. The process makes the barrier layer with an electrolyte comprising a tantalum oxalate solution (See page 4, lines 1-2). The use of the electrolyte for the molding of niobium anodes imparts advantageous and unexpected benefits. (See Specification, page 4, lines 20-30 page 4, lines 7-18; page 5, lines 1-17).

Yoshida's solid electrolytic capacitor would not have motivated one of ordinary skill in the art to make an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer, and (c) a dielectric barrier layer comprising niobium pentoxide, in which the anode has a tantalum content in the dielectric barrier layer ranging from about 1500 to about 12,000 ppm, relative to the anode. Yoshida's teachings simply do not have the details that would have made one of ordinary skill in the art practice a process for producing an anode for a capacitor by sintering niobium metal powders and electrolytically producing a dielectric barrier layer on a surface of a sintered body, as claimed by Applicants.

Löffelholz does not overcome the deficiencies of Yoshida. One of ordinary skill in the art following Yoshida would not have been motivated to combine Löffelholz and Yoshida and arrive at Applicants' invention.

Löffelholz teaches a process for producing niobium and/or tantalum powders by reducing the corresponding niobium and/or tantalum oxides by means of alkaline earth metals and/or rare earth metals, which is characterized in that the reduction is carried out in two stages at a controlled temperature, in which the first reaction stage is conducted as far as an average composition corresponding to $(\text{Nb}, \text{Ta})\text{O}_x$, where $x=0.5$ to 1.5 and before the second stage the reduction product from the first stage is freed from alkaline earth oxides and/or rare earth metal oxides which are formed and optionally from excess alkaline earth metal and/or rare earth metal by washing by means of mineral acids (See Summary of Invention). In the first reduction stage, a melt of the alkaline earth metal and/or rare earth metal is preferably placed in a vessel and the oxide is gradually metered into the melt in such a way that the temperature of the first reduction stage does not fall below 750°C and does not exceed 950°C . Metering is most preferably effected in such a way that the temperature does not vary by more than 50°C from a preselected temperature within the aforementioned range. This preselected temperature is most preferably between 750 and 850°C . The oxides which can be reduced are Nb_2O_5 , Nb_2 and/or Ta_2O_5 . Nb_2O_5 is particularly preferred.

Löffelholz does not contain any teachings that would have motivated one of ordinary skill in the art following the teachings of Yoshida to modify Yoshida and make or practice Applicant's invention. Yoshida, for instance, merely describes niobium anodes which contain specific quantities of nitrogen, whereas Löffelholz describes a process for the production of niobium and/or tantalum powders. Even if Yoshida and Löffelholz were combined, the combined teachings would not suggest Applicants' invention. As such, one of ordinary skill in the art following Yoshida and familiar with Löffelholz would not have been motivated to make or practice Applicants' invention. Reconsideration is requested.

The comments in the Office Action do not support the rejection. For instance, the Office Action relied on Column 6, lines 16-18 to support the argument that

Löffelholz teaches using tantalum oxalate solution. Column 6, lines 16-18 of Löffelholz teach that the "tantalum contents between 1,000 and 12,000 ppm which result from the use of reactors lined with tantalum are not harmful." Such teachings would not have taught one of ordinary skill in the art following Yoshida to modify Yoshida and make or practice Applicants' invention. Such teachings are not suggestive of Applicants' invention. Reconsideration is requested.

2. The Rejection of Claims 3, 6 and 7 Under 35 USC 103 over Yoshida.

The Office Action rejected Claims 3, 6, and 7 under 35 USC 103 Yoshida.

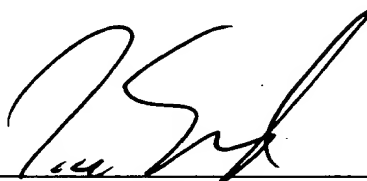
Applicants' invention, as encompassed by Claims 3, 6, and 7 relates to an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer, and (c) a dielectric barrier layer comprising niobium pentoxide, in which the suboxide layer has a thickness that is at least about 50 nm. In one embodiment, Applicants' invention relates to a process for producing an anode for a capacitor comprising sintering niobium metal powders and electrolytically producing a dielectric barrier layer on a surface of a sintered body, in which the barrier layer is produced with an electrolyte that contains an aqueous solution of an organic acid containing an anion and the electrolyte has a conductivity ranging from about 0.15 to about 25 mS/cm or at least about 5 mS/cm.

Yoshida's solid electrolytic capacitor or Yoshida's method for making a solid electrolytic capacitor would not have provided meaningful guidelines that would have motivated one of ordinary skill in the art following Yoshida to modify Yoshida and make an anode comprising (a) a niobium metal core, (b) a conducting niobium suboxide layer, and (c) a dielectric barrier layer comprising niobium pentoxide. As discussed above, the dielectric layer disclosed by Yoshida consists of a niobium oxide layer (not a suboxide) and a niobium nitride region (See Column 2, lines 56-57), which can be present in various modifications (See Column 2, line 58 to Column 3, line 32). No reference is made to a conductive niobium suboxide layer encompassed by Applicants' invention. Such teachings would not have been suggestive of any embodiment encompassed by Claims 3, 6 and 7.

In view of the foregoing amendments and remarks, allowance of Claims 1-8 is earnestly requested.

Respectfully submitted,

By



Diderico van Eyl
Attorney for Applicants
Reg. No. 38,641

Bayer Corporation
100 Bayer Road
Pittsburgh, Pennsylvania 15205-9741
(412) 777-8355
FACSIMILE PHONE NUMBER:
(412) 777-8363

/jme/DVE0390